

Eucalyptus —Hazard?

Lessons from the East Bay



NASA

1991 OAKLAND “TUNNEL” FIRE - On October 20, 1991, a combination of unseasonably high temperatures, low relative humidity, strong winds, and high levels of dry, overgrown vegetation resulted in a raging firestorm that became known as the worst wildfire in California's history. When it was all over, 25 people were killed, 150 others were injured, and 2,900 structures were destroyed, totaling \$1.5 billion in damages. The fire burned over 3,000 acres. During the 10 hours the fire swept through the Oakland and Berkeley Hills, one building was ignited every 11 seconds.

What could have led to such devastation? Of course, no single variable is responsible. An accidental human-caused fire, which had been brought under control, was rekindled when an east wind set in. Dense vegetation was identified as a major contributor to the fire behavior, and in particular, dense eucalyptus forests. It was estimated that over 70% of the energy released through the combustion of vegetation was due to eucalyptus. In many cases, eucalyptus trees were adjacent to houses, with their canopy spreading over the roofs. The density of fuels immediately surrounding homes resulted in a continuous chain that spread the fire from structure to structure.

In the 1970’s, a major freeze had left what seemed to be vast numbers of standing dead eucalyptus trees throughout the Oakland and Berkeley Hills. Many were cut, since the fire hazard of dead trees would be even more extreme than when they were alive. As it turned out, the trees were not dead, and resprouted into dense tree clusters. By 1991, the resprouts were well grown, and provided more fuel than then had existed before the freeze. Burning embers landed in some of these groves when the fire “jumped the freeway”.

Since 1991, there has been a growing consensus that wildfires are difficult to contain in the East Bay Hills due to the rugged topography and extensive wildland-urban interface. Firefighters also now realize that wildfires are almost impossible to contain in eucalyptus forests. Approximately 1,500 acres of eucalyptus in the East Bay is managed by the East Bay Regional Park District (EBRPD), extending from Lake Chabot to Wildcat Canyon. About 500 acres have been removed or thinned over the last 30 years, with 80% of the work occurring after the 1991 fire.

The EBRPD has recommended treating an additional 900 acres, targeting regional parks such as Lake Chabot, Anthony Chabot, Redwood Regional, Sibley, Tilden and Claremont Canyon. The EBRPD obtained a 3-year FEMA (Federal Emergency Management Agency) Grant, for fire hazard mitigation, including over \$1 million for eucalyptus treatment. By clearing the understory, and removing trees, the EBRPD hopes to minimize fire spread and intensity, when fire returns to the East Bay.

*Agnes Farres
Student Conservation Association*



Lessons from Southern Marin

2004 TAM FIRE - On May 9, 2004, a sunny Mother’s Day Sunday, turned into an emergency situation, when a wildfire broke out in Golden Gate National Recreation Area. The exact circumstances of how the fire started remain unconfirmed, however the cause is unquestionably human and matches were determined to be the ignition source.

With a 7-minute response time, engines from Marin County Fire Department’s Throckmorton Station were the first on scene, followed by other local fire agencies, and National Park Service firefighters. The fire quickly reached a 70 acre eucalyptus grove, where it burned rapidly and with great intensity, even though it was still spring. As the result of a highly successful initial attack, only 12 acres burned. No structures were lost, and no injuries were reported. The fire burned hot, consuming all surface fuels in the thick litter that had accumulated. Golden Gate National Recreation Area has managed the ongoing stabilization and rehabilitation of the burned area. Hundreds of unstable, scorched trees were felled and chipped. The chips were broadcast onsite to reduce erosion, and extensive revegetation with native species is planned.

Meanwhile, residents of Tamalpais Valley were suddenly confronted with questions about defensible space around their homes, escape routes, and evacuation plans. Community leaders stepped forward to organize two meetings which would lay the foundation for important wildfire planning in the future. Representing over 3,500 households, these neighborhoods are just some of the many scattered throughout the valleys of Mount Tamalpais, where the memory of devastation from a major fire in 1929 still looms. In some of these neighborhoods, fire insurance has been difficult to obtain.

Fuel Load Comparisons

Eucalyptus, California bay, and coast live oak forest types

FUEL ELEMENT	Live Component	Dead Component	Live Component	Dead Component	Live Component	Dead Component
Herbs and grasses	0.03	0.02	0.42	0.18	0.31	0.17
Shrubs and saplings	0.49	0.0	0.27	0.01	0.25	0.03
Fine twigs (1-hour)		1.33		0.69		1.18
Small branches (10-hour)		2.94		1.93		4.60
Medium branches (100 hour)		1.41		2.67		2.40
Logs (1,000 hour)		19.63		11.06		0.69
Litter (leaves, bark, needles, etc.)		4.99		1.70		2.19
TOTAL FUELS	Eucalyptus - 30.84 tons per acre		California Bay - 18.93 tons per acre		Coast Live Oak - 11.82 tons per acre	

Fuel in a vegetation community consists of both live and dead material measured in tons per acre. Eucalyptus typically displaces California Bay or Coast Live Oak communities which increases the fuel load. This comparison is based on fuels data collected from 7 Eucalyptus sites, 39 California Bay sites, and 11 Coast Live Oak sites within Point Reyes National Seashore and Golden Gate National Recreation Area. (NPS Data) “Total fuels” represents fuel available for wildland fire consumption, not total biomass. Most importantly, the mass of the live trees is not included. 1, 10, 100, and 1,000 hour fuels are classified by their diameter and take different amounts of time to dry out and become available for consumption.

Below, top photo: The thick litter on the floor of the eucalyptus grove was completely consumed in the Tam Fire. The live foliage proved fire resistant, so a potentially catastrophic crown fire was avoided. *Bottom photo:* The ridge in the background of a photo from the 1940s shows the grove that burned. The community of Tamalpais Valley has filled in the hillsides. Today this view would be blocked by other houses in the foreground.

